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Site 300’s blast from the past



JACQUELINE MCBRIDE/NEWSLINE

From left: Jim Lane, Site 300 manager, and Bill Bookless, associate director for Safety and Environmental Protection, celebrate the 50th anniversary of the Site 300 experimental test facility Tuesday.

Five decades ago, the University of California’s Berkeley Radiation Laboratory was referred to as Site 100. When the Lawrence Radiation Laboratory was established in 1952, it promptly became Site 200. About one year later, the Atomic Energy Commission began searching for a remote location to conduct explosives testing. By

1954, 4,000 initial acres were purchased, Site 300 was developed and the name stuck. In 1957, a 3,000-acre AEC purchase expanded the site to its present 7000-acre footprint at the Alameda-San Joaquin County line, in the foothills 15 miles south-

See **SITE 300**, page 8

Optics and instrument modules for the National Ignition Facility installed ahead of schedule

By Bob Hirschfeld

NEWSLINE STAFF WRITER

At an all-hands meeting late last year, the National Ignition Facility’s Ed Moses set an ambitious goal for his workers. In less than a year, by Oct. 23, 2005, he wanted them to install 1,000 line replaceable units (LRU), the complex modules containing optics and instrumentation, through which NIF’s 192 laser beams must pass as they make their way through the enclosed beamline to a tiny gas-filled pellet in the target chamber. It didn’t take that long. On Oct. 5, 2005, Moses, now the Lab’s associate

See **NIF**, page 8

Eliminating manmade emissions will require multiple approaches

By Charlie Osolin

NEWSLINE STAFF WRITER

Energy is much on people’s minds these days, so here’s a quick quiz to see if you’ve been paying attention: Which of the following will enable the United States to eliminate manmade emissions of climate-changing carbon dioxide by 2050? A. Replacing petroleum with hydrogen to fuel all motor vehicles and aircraft.

See **ENERGY**, page 7

Evacuation drill will test Lab’s emergency readiness

The ability to safely evacuate our working areas is an essential part of the Lab’s emergency preparedness. For the safety of all employees, the Laboratory will conduct a site-wide evacuation (self-help) drill during the week of Oct. 24. The drill is designed to ensure that employees at both the Livermore site and Site 300 understand their local evacuation, muster and communication procedures. The drill will consist of facility evacuation, personnel accountability, access control and communications. Amateur Radio Emergency Services (ARES) will be deployed site-wide to assist communications. Groups will report through the established zone system to the Emergency Operations Center (EOC) using phone lines (if available), ARES or run-

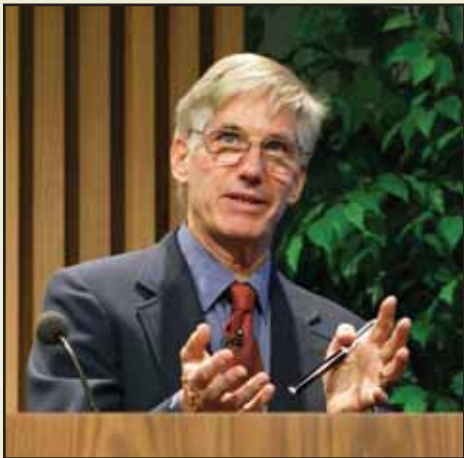
See **DRILL**, page 4

Physicist examines dark side of energy

By Anne M. Stark

NEWSLINE STAFF WRITER

Nobody has a definitive answer as to what dark energy is. But Tony Tyson is on a quest to not only find out, but to make a database of it. After all, most of the universe is made up of dark energy, said Tyson, a UC Davis physics professor and a speaker in the Director’s Distinguished Lecturer Series. “Ninety-five percent (70 percent of which is dark energy) of our uni-



JACQUELINE MCBRIDE/NEWSLINE

Tony Tyson

verse is made of something we don’t understand,” Tyson said Tuesday to a crowded Bldg. 123 auditorium audience. Dark matter was discovered in the 1930s and scientists since have been studying its role in our galaxy as well as galaxy clusters throughout the universe. “Our galaxy and clusters of galaxies are held together by invisible

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Winter tips for conserving energy
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Sharpshooters are best in the west
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“Oz-some” HOME Campaign start
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LAB COMMUNITY NEWS

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Wednesday
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The Lab's Biosciences Operations staff is conducting a **hurricane relief barbecue**. Tickets must be purchased by Oct. 17. There are two barbecue options: lunch on the Bldg. 361 front lawn from 11:30-1:30. (For \$10 you'll get a tri-tip sandwich, salad, cookie and drink); or dinner-to-go in the Bldg. 361 parking lot from 4-5 p.m. (For \$30 you'll get a tri-tip, taco salad, four baked potatoes and rolls.) Proceeds go to support hurricane relief provided by the American Red Cross and the Humane Society. To purchase tickets, call Patsy Gilbert, 3-3162.

Thursday
20

The Living Well Speaker Series continues with **"The Working Parent"** from noon to 1 p.m. in the Bldg. 361 auditorium. "The Working Parent" will be presented by Ellen Fogarty, president and owner of FACT, Fogarty Associates Consulting and Training. In this workshop you will learn ways to assess your current lifestyle, set priorities and choose realistic goals. You will review tools to help meet the multitude of demands facing the working parent, weighing what matters most, meeting your own needs, and caring for your family and your job.

Living Well speaking engagements are free and open to all employees. The series is sponsored by the Work-Life Center, Health Services Department/Employee Assistance Program and EAP/CONCERN (external employee assistance program). For more information, call the Work-Life Center, 2-9543.

Up
&
Coming

Sign up by Oct. 20 for **LLLWA's Annual Membership Drive and Scholarship Fund-raiser**, Wednesday, Oct. 26 from 11:45 a.m. to 1 p.m. at Retzlaff Winery. Guest Speaker Maureen Morley of the Lab's Work-Life Center will discuss "Inspired Living." Announcement of new officers and a networking opportunity will follow. Cost is \$25 which includes lunch and FY06 membership. For more information contact Yahel De La Cruz, 4-3507 or delacruz3@llnl.gov.

Swimmers' pool memories



MARK LOWRY

Because of serious structural concerns and to protect users, the Laboratory has closed the swimming pool. This week, some 30 employees who logged many hours swimming in the Lab pool over the years gathered nearby for a reunion and to remember the good times. The pool's history dates back to the 1940s, when the site was a naval air station. The pool was the location for the ditch-and-recovery training of many pilots. In recent years, the pool was managed by the Livermore Laboratory Employee Services Association (LLESA).

IN MEMORIAM

Robert K. Tandy

Robert K. Tandy died on Oct. 3 following a long illness. He was 79.

Tandy was born on Oct. 4, 1925, and was raised in Richmond, moving to Livermore in 1963. He started work at the Lawrence Berkeley Laboratory, transferring to Livermore Laboratory in 1962. He was a computer programmer in the Biomedical Department, retiring in 1980.

Tandy was a World War II veteran, serving in the U.S. Navy as a machinist mate. He loved fishing, especially in the ocean, from his 35-foot fishing boat. He was a life member of the

Richmond Rod and Gun Club. He enjoyed spending time with his friends.

Tandy leaves his wife of 59 years, Kay (Ina Katherine); son Michael and his wife Barbara of Manteca; daughter Jeanette Clark and her husband John of Turlock; son Patrick of Livermore; four grandchildren; two great-grandchildren; and two nephews. He was preceded in death by his parents George and Sylva Tandy, his brother Dair, and one grandson.

Burial will be at Rolling Hills Cemetery in San Pablo. Services will be private.

Newsline

Newsline is published weekly by the Public Affairs Office, Lawrence Livermore National Laboratory (LLNL), for Laboratory employees and retirees.

Contacts:

Media & Communications manager: Lynda Seaver, 3-3103

Newsline editor: Don Johnston, 3-4902

Contributing writers: Bob Hirschfeld, 2-2379; Linda Lucchetti, 2-5815; Charles Osolin, 2-8367; David Schwoegler, 2-6900; Anne M. Stark, 2-9799; Stephen Wampler, 3-3107. For an extended list of Lab beats and contacts, see <http://www.llnl.gov/pao/contact/>

Photographer: Jacqueline McBride

Designer: Julie Korhummel, 2-9709

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Telephone: (925) 422-4599; Fax: (925) 422-9291

e-mail: newsline@llnl.gov or newsonline@llnl.gov

Web site: <http://www.llnl.gov/pao/>



LAB TV broadcasts

MONDAY– FRIDAY, OCT. 17–21

Associate Director Bruce Goodwin hosts this **2005 HOME Campaign** presentation, which highlights the Lab's efforts in supporting the community. This video also features individual employee stories, as well as coverage of this year's **"Run for HOME."**

In addition, a variety of programming from **HOME-sponsored organizations**, such as United Way, Habitat for Humanity and the Tri-Valley Community Fund, will air following the HOME presentation.

For more information on the HOME Campaign, see: <http://home.llnl.gov/index.html>

These programs will appear on Lab TV Channel 2, 4 and 7
at 10 a.m., noon, 2, 4 and 8 p.m. and 4 a.m.

For information
about Lab TV
broadcasting and
video production,
contact LLTN,
3-3846.

Ride to Site 300 will honor armed forces veterans

Calling all motorcyclists. The Livermore Laboratory Armed Forces Veterans Association (LLAFVA) wants you.

To honor veterans both fallen and living, the LLAFVA is sponsoring the second annual “Lab Ride” for motorcyclists at high noon on Thursday, Nov. 10.

The event, organized by Ted Sheppard and Chelle Clements, is being held in honor of Veteran’s Day. In addition, the ride will serve as the kickoff for the Laboratory’s Fire Department participation in Toys for Tots.

Riders are asked to make a \$20 donation to help pay for holiday gifts for LLNL’s pen pals, the 101st Airborne in Iraq, and the Toys for Tots program.

Riders should meet in parking lot B7-N, before making a ceremonial toy pick up lap around Inner Loop Road. Riders will then head out East Gate, turn south on Greenville Road and then east on Tesla Road. One of the Lab’s Fire Department trucks will lead the riders to Site 300. A Veteran’s Day Ceremony honoring Laboratory employees who have served in Iraq and Afghanistan and a barbecue for all the riders will take place at Site 300.

Sheppard organized the Lab’s first ride last



JACQUELINE MCBRIDE/NEWSLINE

Last year’s “Lab Ride” drew 106 motorcyclists who rode to Site 300 in support of U.S. troops in Iraq and Afghanistan.

year, which brought 106 riders out and netted \$3,117 in donations to be used for gifts and supplies for U.S. Army A Company 8th Engineer Battalion, 1st Cavalry Division in Baghdad.

Riders from outside the Laboratory or from Sandia may participate by joining the ride at the Discovery Center’s parking lot off of Greenville Road.

Non-rider employees who would like to partic-

ipate may donate a toy, watch the ride and meet the fire department on the toy pick up lap at drop-off locations at Bldgs. 274, 543 and 482.

Riders interested in participating are asked to contact Sheppard, sheppard1@llnl.gov, or 3-0787, to reserve a spot.

Veterans who have recently served in Iraq or Afghanistan are asked to contact Clements at clements3@llnl.gov, or 3-8134.

Ways to save energy and reduce costs at home

Cold winds, rainy days and high energy prices are heading our way this winter. Yes, winter is coming. Before turning on every light in the house and keeping the heater on 24-hours-a-day, keep these energy tips in mind. They will not only make you more energy efficient, but will save you money. Here are some simple tips on ways to save energy at home:



Be energy conscious, both at work and at home.

- For heating, turn thermostats to 68°F when you’re home and down to 55°F when you leave.
- Replace aging, inefficient appliances. Even if the appliance has a few useful years left, replacing it with an Energy Star model is generally a good investment.
- Clean or replace furnace, air-conditioner and heat-pump filters.
- Fix defective plumbing or dripping faucets. A single dripping hot water faucet can waste 212

Employees asked to assist federal conservation effort

The assistance of Lab employees is requested to help reduce energy disruptions caused by hurricanes Katrina and Rita.

On Sept. 26, President Bush issued a memorandum directing heads of departments and agencies to “take appropriate actions to conserve natural gas, electricity, gasoline and diesel fuel to the maximum extent consistent with effective discharge of public responsibilities.”

Lab employees are asked to contribute to this effort. LLNL led the way during the 2001 California electrical emergency, demonstrating the best public agency response in a load-reduction test conducted by Cal-ISO.

Employees can contribute to this effort by

turning off all unused office equipment and lighting. Remember to turn off your office lights if you are leaving for more than one minute. Reduce corridor lighting where feasible. But do not turn off lights at circuit breakers in electric panels, as this may damage emergency lighting battery packs. Turn off unused equipment, unless it must be maintained in “standby.” If you have manual or programmable thermostats, ensure that heating and cooling systems are turned down during unoccupied periods and that normal thermostat set points are adjusted to 68°F for heating and 78°F for cooling. These simple measures alone will go a long way toward achieving our goals during the crisis.

gallons of water a month. This not only increases water bills, but also increases the gas or electric bill for heating the water.

- When washing clothes, make sure they are full loads and consolidate dryer loads.
- Replace incandescent light bulbs with compact fluorescent lamps; turn them off when not

needed.

- Replace light switches with occupancy sensor switches in the kitchen, hallways and bathrooms.
- Seal and insulate your home.
- Insulate ceiling to R-30 standards if your attic has less than R-19.
- Caulk windows, doors and anywhere air leaks in or out. (Do not caulk around water heater and furnace exhaust pipes).
- Weather-strip around windows and doors.
- Wrap heating and cooling ducts with insulation duct wrap. Most homes lose up to 25 percent of the air flow to leaks. (Use mastic sealant or foil tape; duct tape doesn’t actually work for ducts and it doesn’t adhere for long).
- Close the damper when the fireplace is not being used. Try not to use the fireplace and central heating system at the same time. Most fireplaces actually lose more heat up the flue than they provide.
- In the winter, open the shades on sunny days to help warm rooms, but close them when the sun goes down to retain the heat.

Energy efficient products are the way to go. The next time that you are shopping for new appliances, look for the Energy Star logo.

Go to the PG&E Website (www.pge.com) to complete a Home Energy Analyzer (specific to your home), and start saving energy and costs today.

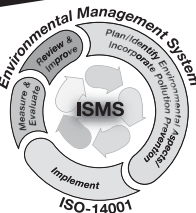
Practice paper conservation



Environmental Tips

Print or copy documents on two sides or use e-mail whenever possible. Such actions help us reduce solid waste.

Visit the Environmental Management website regularly to learn how we can continue to be good environmental stewards. Go to <http://www-epd.llnl.gov/ems/index.htm>





NEWS YOU CAN USE

Lab’s team takes ‘Best of the West’ in competition

By David Schwoegler

NEWSLINE STAFF WRITER

Six members and two coaches of the Security Department’s Protective Force Division Competition Shoot Team participated in a statewide Special Weapons and Tactics Competition sponsored by the Santa Clara County Sheriff’s Department. And when the smoke had cleared, the eight Laboratory top guns took home all the marbles.

Known as the “Best of the West,” the competition was held Sept. 22 and 23. Nationally recognized in the law enforcement field, the event is a qualifying shoot for the World SWAT Competition, which will be a future stop on the team’s itinerary.

This year’s competition included 25 teams from prominent law enforcement agencies in northern and southern California, totaling 150 individual competitors. Last year, in their first try, the Lab team placed 10th overall in this competition. This second attempt proved even more successful.

According to Protective Force Division Leader Jim Ellington: “We are very proud to report that the Lab team placed first overall this year, outscoring the second place team by 15 points. Our security police officers also captured a 1st-, 2nd- and a 3rd-place finish in three of the four team events, long



PFD’s Competition Shoot team (at left) proudly displays their award for besting 24 other teams in the “Best of the West” SWAT Team shooting competition.

(Below) Two team members master an obstacle in one of the competition’s four team events.



gun, jungle trail (an obstacle shooting course), physical challenge and team assault.” In addition, all of the PFD competitors placed in the top 20 percent of the field of 150 with their individual events.

“This type of competition judges the important elements of SWAT functions: speed, marksmanship, as well as individual and team tactics. Having our team place first is a true accomplishment. It speaks to the level of equipment, training, recruitment and the individual commitment of our PFD staff,” Ellington added.

DRILL

Continued from page 1

ners to Bldg. 490.

Drills and exercises are designed to ensure the safety of employees, test the emergency response capabilities at LLNL and comply with various regulatory requirements. All employees are encouraged to review the location of their assembly points and ask their supervisors if they are uncertain.

Drill briefings for self-help coordinators, zone

supervisors, assembly point leaders and ARES members will be held on Monday, Oct. 17 at the Bldg. 543 auditorium at 9 a.m. and 1:30 p.m. These briefings will include an overview of the changes to the recently revised Self-Help Plan. These changes include the formal elimination of sweep teams and establishing access control in keeping with the programs’ central concept of life safety.

Employees in limited area facilities with alarmed doors that would be crashed out in an emergency situation should talk with their security representatives to obtain information on monitoring and re-sealing doors

crashed during the drill. The Security Department must receive Security Certification forms and sealer requests at least one week prior to the drill date (by Oct. 19).

Employees should contact their directorate self-help coordinators for local information on evacuation procedures and assembly points. General information on LLNL emergency response procedures can be found in the Web-based course, EM-0001W; changes to the LLNL Self-Help Plan are reflected in the revised EM-1500W, also available on the Web. For more information, contact Sue Broadway, LLNL self-help coordinator, at 4-3759.

Technical Meeting Calendar

Friday
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INSTITUTE FOR GEOPHYSICS AND PLANETARY PHYSICS

“The Smallest Massive Black Holes,” by Aaron Barth,

University of California, Irvine. Noon, Bldg. 219, room 163. Property protection area. Foreign national temporary escorted building access procedures apply. Contact: Bob Becker, 3-0664, or Lisa Lopez, 3-0250.

Monday
17

CHEMISTRY AND MATERIALS SCIENCE

“Recent Adventures in Natural Product — Derived Heterocyclic Compounds,” by

Joseph Konopelski, University of California, Santa Cruz. 2 p.m., Bldg. 151, room 1209, Stevenson Room. Property protection area. Foreign national temporary escorted building access procedures apply. Contact: Ted Tarasow 3-7241, or Kathy Ricard, 3-8024.

Wednesday
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INTEGRATED COMPUTING & COMMUNICATIONS DEPARTMENT

Macintosh Technical Seminar Series. 9 a.m. (early start time),

Bldg. 543, auditorium. For further information, contact Duane Straub, 2-9774, or straub1@llnl.gov

Friday
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INSTITUTE FOR GEOPHYSICS AND PLANETARY PHYSICS

“The Stellar Initial Mass Function and Implications for Galaxy Evolution,” by Rosie Wyse, Johns Hopkins University. Noon, Bldg.

219, room 163. Property protection area. Foreign national temporary escorted building access procedures apply. Contact: Wil van Breugel, 2-7195, or Lisa Lopez, 3-0250.

PHYSICS & ADVANCED TECHNOLOGIES DIRECTORATE-WIDE SEMINAR

“Inside the Neutrino Matrix: The Double Chooz

Experiment,” by Robert Svoboda, Louisiana State University. 2 p.m., Bldg. 2128, room 1000. Common use facility. Foreign nationals may attend. Contact: Adam Bernstein, 2-5918, or Alan J. Wootton, 2-6533.

ELECTRONICS ENGINEERING TECHNOLOGIES DIVISION

“Noise Reduction in Functional Magnetic Resonance Imaging Using Shrinkage Estimation and Time Series Modeling,” by Vera Bulaevskaya, Carnegie Mellon University. 10 a.m., Bldg. 141, room 1104, Nyquist Room. Property protection area. Foreign national temporary escorted building access procedures apply. Contact: Lee Glascoe, 3-2922.

The deadline for the next Technical Meeting Calendar is noon Wednesday.

There's no place like HOME



*Photos by Jacqueline McBride,
Frank Nuñez and Joseph Martinez*



This year's HOME Campaign kicked off on Tuesday with the annual Run for HOME and agency fair, this year patterned after the theme "There's No Place Like HOME." The celebration was attended by Wizard of Oz characters, including, top left, Jan Tulk as Dorothy, Steve Goodman as the Tin Man, and Mary Dyer as a member of the Lollypop Guild. More than 125 local charity agencies attended, including, upper right, the Valley Humane Society with Dazzle, the therapy dog. Several hundred employees ran in the HOME race, center, and winners included, clockwise, LLNL's Jim Jones and Carla Lewis, and Site 300's Gary Riley and Anne Vu (with Jim Lane, Site 300 site manager). Deputy Director of Operations Wayne Shotts, at left above, dropped by the Livermore Valley Education Foundation agency table. Lee Neely and Chelle Clements, above center, attended the fair in costume. Music was provided by the Amador Valley High School marching band. Members of the IPAC centipede, right, provided their own version of the yellow brick road.



AUTOMOBILES

1991 - Honda Accord LX sedan, 136,000 mi, excellent condition, automatic, fully equipped, \$3000 obo 925-846-3548

1991 - Mitsubishi 3000GT, looks great inside and out, automatic transmission, A/C, C/D, tinted windows. Does not run; needs engine work, \$1000 B/O 3-4010 209-239-7576

1994 - Volvo 940 sedan, Turbo, 72,000 miles, original owner w/all maint. records. Exc. condition. \$6,200. 415-717-6929

1989 - Toyota Camray LX, good cond, orig owner, ac, sun roof asking \$3000. 925-462-4126

1984 - Jeep CJ7, 4-inch lift, new soft top, interior and more, 114K miles \$7,500 obo 209-834-8689

1997 - El Dorado, in beautiful condition. All pwr., tires like new, leather pwr. seats, low miles. Just \$10,000.00 OBO 510-582-2938

1991 - Mercedes 190E, mint green, asking \$3,850. OBO. Also 95 Madza Milleninum 40K miles, mint cond., six cd plyr., excellent sound, premium wheels. \$7,500. OBO 209-845-0699

2001 - VW Jetta V6 GLS sedan 4D. Automatic, 115K miles, power door locks/windows, sunroof, CD player, alloy wheels, needs cat. converter, \$8400 OBO. 209-495-6957

2002 - GMC Yukon, 33K miles, SLT fully loaded. Asking \$25K OBO. 209-523-6942

1998 - Audi A8 AWD Quattro. Runs like a dream. Auto everything; real pleasure to drive. 103k miles. Luxury car for only \$14,000. 510-569-4435

AUTOMOBILE ACCESSORIES

Weld Cheyenne 16x10 wheels + procomp a/t 33 (305/70r16) tires. Good condition. 8x170mm. Ford super duty and excursion. \$1300 takes the set. 925-294-5939

Rims/tires(4):4A2006 Chevy Silverado 2500, 40 miles, Bridgestone 245/75R16; polished. Al rims, 8 lugs; Make offer 925-595-4893

Genuine Toyota Tacoma bedliner, under-rail style with tailgate protector, fits 1995 to 2004 short bed, great cond., \$300 new, \$85 obo 925-443-3970

BICYCLES

Schwin 10-speed bicycle. Le Tour III model, 26-inch (large) frame, orange. 20 years old, but mainly in storage. Great condition. \$100 OBO. 925-964-0534

Dk blue Diamond Back mountain bike, lots of extras. \$175. Excellent condition!!! 209-522-2528

Girls mtn. bike, 21 speed, purple diamond back, 11 inch. for 8 or 9 year old, 5 years old, used once, excellent cond. paid \$200, \$75 O.B.O. 925-449-8806

BOATS

35HP outboard with prop and gas can. Make Offer. 925-516-2570

ELECTRONIC EQUIPMENT

Nice starter stereo equipment. Akai stereo cassette deck \$50.00, Sony AM FM stereo receiver, \$50.00. Excellent condition. Can bring to work. 510-537-7222

HP Pavilion computer system, 15-in. monitor, 30-GB hard drive, CD RW, Windows 2000, HP deskjet

CLASSIFIED ADS

842C printer, all for \$50/OBO. 925-846-5110

GIVEAWAY

Oversized comfy chair with matching ottoman, forest green. Excellent condition. You pick up. 925-784-4083

Lawn mower. Sears. Engine needs works. Hard to start. 925-830-8640

19-in. monitors (2), excellent condition, you haul. 925-292-1166

HP-5370c scanner, usb, used <10 times, bad power supply circuit board, maybe fixable if you know how? 925-462-6527

Approx. 12 wk Dalmation mix puppy. Very loving; needs good home. Potty trained & Sleeps inside. 209-304-3775

HOUSEHOLD

Youth student desk & matching bed set w/twin mattress (underside drawers, lg. middle cubby.) 1 full Set or indiv. \$60/set or \$40 ea. 925-455-1842

Pier One - Panama Tropic Design queen head/ft board w/mattress frame \$200. Two, in package bistro director chairs, white w/green material. \$30 925-570-0822

Deep blue couch with high back in perfect shape. This couch has two built-in recliners on each end for extra comfort. \$250 925-443-7020

Spring Air Briarcrest mattress. Almost new. Extremely luxurious pillowtop. XL twin, \$350 and king, \$700 available. Livermore 925-454-5214

White antique square coffee table with Queen Anne legs and beveled glass top. Excellent condition. \$250 value. Best offer. 925-447-0411

Old Books: History of the World, 4-volume set by John Clark Ridpath, published 1890. \$25 209-832-5388

Sofa by LaZBoy (great condition) \$100; recliner by LaZBoy (great condition) \$60 925-455-8158

Diamond earrings set in platinum, 2/3 ct. t.w., certified diamonds with certificate and gem ID card (not mall diamonds), \$899/OBO 925-876-5188

Four oak barstools, walnut finish, \$80 OBO. 209-838-3279

Farmhouse style kitchen table, w/2 chairs. White legs, oak top. Expandable, \$125 obo. 209-522-2528

Book cases, qty. 2, 72Hx 25Wx10D in. Ten shelves, adj. every 3 in. Second unit has additional rounded corner shelving. Very nice. Pine color. \$75 obo. 925-200-2543

Oak computer desk: hutch/ printer stand incl.,25-in. x 49-in.; make offer 925-595-4893

Credenza, solid walnut, 68x21 inches, 32 inches high, reversible sliding doors, \$100 925-447-4521

Loft bed set - black tubular frame, single bed, with white laminate tiltable desk and shelves underneath. Ex cond. Great for younger student. \$90 925-443-1074

For Sale: Two curio style solid oak cabinets. Size: 25-inches wide 16-1/2 inches deep 68-inches tall. Excellent condition. Glass front doors \$200.00 925-828-4376

Two large framed mirrors. One gold framed, one silver framed. Approx. 3ft. x 4 ft. each. \$25.00 each. 5 minutes from Lab. Can send pictures. 925-455-4432

Thomas the train pieces: 56 track pieces, plus misc. parts and trains, offer. Child carrier for adult bike, offer. 925-829-1474

MISCELLANEOUS

King size mattress/box spring (high end) w/frame. Excellent condition. \$300 OBO Will deliver locally. 925-455-1842

Redwood Barn, 60-ft. X 50 ft, plus 2 pole barns. Bids being accepted. For information, call 9 a.m. to 5 p.m. 209-667-0663

Medela Pump-in-Style shoulder bag double breast pump. Great condition, inc. ice packs, battery pack, unused breast shields & extras. \$120 OBO 925-931-1467

Bike, 20-in. w/trick handlebars, hand brakes, new knobby tires,\$30; Porter Cable 373 Tiger Saw, Q-change chuck, metal case, exc.(new \$167) \$80. 209-239-8984

Wood lathe, Sears 12 in. X 36 in., includes a set of gouges. \$100.00 or best offer. 925-706-7444

Natural raised beef for sale (Angus) 1.10 lb. live weight. Will be ready in July-06 925-443-3358

Air compressor, Craftsman, 25 gal. vertical, 5.5 hp, 130 psi, 6.4 cfm at 90 psi, like new \$100 209-832-7582

Christmas tree, artificial Scotch pine, 6.5 feet, in box, \$20.00 925-447-4521

Just in time for Christmas! 7.5 FT Vienna spruce artificial Christmas tree. Never out of box. Hinged branches. \$120 new, asking \$40 obo 510-351-4575

Lathe Logan metal lathe, apart, needs assembly, clean \$250/obo 925-671-7424

Electric mobility scooter with rear basket. Pride Revo three wheel scooter. Seat has adjustable arms. Paid \$1,765, used twice. Make offer. 925-447-6515

Georgous outdoor wall mounted glass light fixtures, 2 each. Dimensions 24-inch high 10-inch wide. Pictures available on request. \$70 for the pair. 925-245-1414

One oversized chair from Macys with ottoman-microfiber fabric, great condition, chocolate brown. \$50.00 925-455-4432

13-inch tires. 2 Dunlop, 155/80/B13, nearly new tread, only \$25 both. Livermore 925-447-7070

MOTORCYCLES

1988 - Yamaha MX100, great beginners' bike, runs great \$530 209-836-3481

1993 - Honda Shadow VLX, new rear tire, new battery runs great. Must see. Best offer. 510-278-5842

2001 - Honda CR250, 1997 Honda CR125, hydraulic stands, new dirt bike gear 925-525-1314

2003 - Yamaha YZF R-6. Black/silver. 82XX mi. Small cosmetic scratches on one side. Otherwise in great shape w/new Michelin Pilot power tires. 40 mpg! \$6300 925-895-1861

MUSIC INSTRUMENTS

Suzuki violin, 1/4 size, Wolf violin headrest (1/2 size), like new \$250 415-543-3643

PETS & SUPPLIES

Bird house, handmade. Never used. Can bring to lab if interested. \$8.00 510-537-7222

See complete classified ad listings at
<https://www-ais.llnl.gov/newsline/ads/>

Yellow Lab female, one year old. Friendly, house broken, has all shots but needs a larger yard to play in. 925-371-0502

Dog house, igloo type, for medium sized dog, \$50.00, grey color 925-447-4521

RECREATION EQUIPMENT

Tent Trailer, sleeps 6, Coleman Gettysburg, fabric in good condition, \$600, 925-443-5549

Nordic Track - \$25 leave message 925-443-8394

RIDESHARING

Express your commute, call 2-RIDE for more information or visit <http://www-r.llnl.gov/ tsmg>.

Solano County: Vallejo-Benicia - Carpool seeks driver/rider. Schedule B 9/80s. Leave Benicia at 6 a.m., 7 a.m. - 4:45 p.m. work schedule. 707-557-4347, ext. 4-5589

Castro Valley - Gas is too high for me; looking for rideshare. Hours are 6:30-3:30; can be rearranged to fit your schedule. Work AWS 510-537-7222, ext. 4-3814

Modesto - working the 4-10 shift. We have an opening on a luxury van now. The van runs Mon. thru Fri. on the 6-4:30 p.m. shift. 209-667-2365, ext. 2-8321

Walnut Creek - Leave Rudgear Rd. @ 0600 Leave Lab. @ 4:30 , ext. 3-7152

Modesto - Ripon - Looking for an inexpensive, comfortable and reliable ride to LLNL or Sandia from Modesto, Ripon and outlying areas??? Youve found your ride!!! 209-544-6411, ext. 2-2727

Stockton - looking to star or join carpool from stockton 6:30 to 4:00 page me to 00154 or ext.3-0475 thanks. 209-954-1703

SERVICES

Interior, exterior painting. Time to paint before the holidays. Excellent references. Excellent workmanship. 25 yrs. exp. 510-537-7222

Fences and decks: rebuild, fix or replace. 209-833-3325

SHARED HOUSING

Tracy - Room with private bath, \$450 per month, full privileges, satellite TV, DVR, kids ok and close to Bohn Elementary and parks. 925-484-0369

TO TRADE

Service my year+ Panasonic Microwave and let's trade/talk; work must be at our home. 925-735-6002

TRUCKS & TRAILERS

1983 - Mobile Traveler, 18 ft. motorhome, very good condition, \$5400.00 obo 925-447-7768

1996 - Ford Ranger, XLT, extra cab, bedliner, long bed, cassette. Runs well. Nice work truck. \$4,950.00 OBO 510-537-7222

1997 - Nissan Pathfinder SE V6, 150k miles, good condition, stereo, auto transmission, gold color, a/c, service by dealer & tow hitch. Make Offer. 925-984-9839

2004 - Goodyear Marathon trailer tires, 215/75r/14, I have three in excellent shape and a 4th would only be good for a spare. \$225 OBO for all. 925-447-4797

1989 - Truck, Ford F250 pickup, 84,000 miles, good running condition, \$1700/offer 925-443-4349

2002 - 5th wheel, 33 ft, Forest

River, extras, exclt condition. Call for info. 510-317-9879

1997 - F150 Lariat Supercab, 4X4, 107k miles, all power options, tow pkg, many new upgrades, below KBB, \$7800. 925-455-8006

1986 - Chevy Silverado, long bed. Passed smog and currently registered. 3-inch body lift and 33-inch Wrangler MTRs. PW, PL, PS, AT, 4x4. Nice! 209-835-7676

1988 - Toyota Camry LE. Great condition. Automatic, new tires, new stereo. 137K miles. \$2000 obo. 209-832-7204

VACATION RENTALS

Tahoe cabin for rent two blocks from Heavenly, 2 miles from casinos. Sleeps approx 8 adults. \$400/wk, \$200/wknd. 925-240-1615

Tahoe - -West Shore 3/2, w/Jacuzzi tub, fireplace, deck w/large windows, easy walk to Lake/marina, 25 mins. to Casinos. Reserve for the holidays & more info. 925-813-2597

Cozy mountain cabin near Arnold. 4 bedr., 2 bath. Wood burning stove, near fishing, hiking trails, lakes. Plan ahead for snowy weather. 925-245-1114

Soooo cute beach cottage in Santa Cruz. 2 bedr., 2 bath, spa. 4 short blks. to ocean, near harbor. Beautiful fall weather. 925-245-1114

Tahoe-Donner, Truckee CA. 3bd/2bh tranquil mountain cabin near golf, water, biking, hiking, ski, \$125 per night. Available through December. 925-858-0419

Squaw Valley, CA - Thanksgiving week (11/20-27). 1-bedroom time-share condo available at Olympic Village Inn. Sleeps 4+, fully furnished, ski & hiking. Good rate. 415-543-3643

south lake tahoe - 3 bedroom 2 bath chalet,nicely furnished, quiet area,all amenities, close to all skiing, reserve now for holidays! 209-599-4644

Solana Beach/Del Mar - Oceanfront condo, deluxe 2 br., 2-1/2 ba., fully equipped, tennis, pool, jacuzzi, gated and covered parking, near San Diego attractions 925-443-2271

Puerto Vallarta-2 br. oceanfront condo, all amenities, available 1/5/06-1/1206. Playa Del Sol Resort-Costa Sur. \$525. 209-545-1308

Cold Springs, CA. - Sleeps 8-10. 5 min. to Pinecrest Lake. 20 min to Strawberry Snow Park, Dodge Ridge & Beardsley Reservoir. 30 min to Black Oak Casino. 925-240-1206

WANTED

Honolulu - Looking for small condo or studio to rent in Waikiki area from Dec.23-Jan 6. Dates are open; near the zoo. 510-537-7222

Looking for High School Student (female) to Taxi two East Avenue Middle School students to Sunset East Area 2 days/wk. (Wed/Thurs). 925-455-1842

Spike Spider Compact C3 Package to fit P185 70R 14 209-835-8962

Rocking chair - sturdy, low cost or donation for church nursery. Willing to do cosmetic improvements if well built and sturdy. 209-836-5764

Wanted - Size 11 MotoX boots 209-838-0304

Flute for middle school student. 925-682-2358

ENERGY

Continued from page 1

B. Completely replacing coal and natural gas with renewable energy sources to generate the nation's electricity.

C. Building 270 new nuclear power plants.

D. Using heat pumps and solar panels for residential and commercial heating and cooling.

E. All of the above — and then some.

According to the latest long-term energy use and carbon emissions projections by LLNL researchers, the correct answer is E.

"Our projections show that no one technology, and not even a combination of all the known technologies massively deployed, as well as aggressive efficiency and fuel economy improvements, can stabilize U.S. carbon emissions between now and 2050," said Laboratory environmental scientist John Ziagos. "If we want to move toward a carbonless future, no single technology will do — everything counts."

Livermore has been charting the nation's energy production and use since 1975. The Laboratory's "U.S. energy flow charts," based on projections by the U.S. Department of Energy's Energy Information Administration and other data sources, track energy trends, supplies and demand — electrical generation, residential and commercial heating and industrial and transportation uses. The charts were recently automated to illustrate the implications of various "what-if" scenarios of energy supply, efficiency and demand.

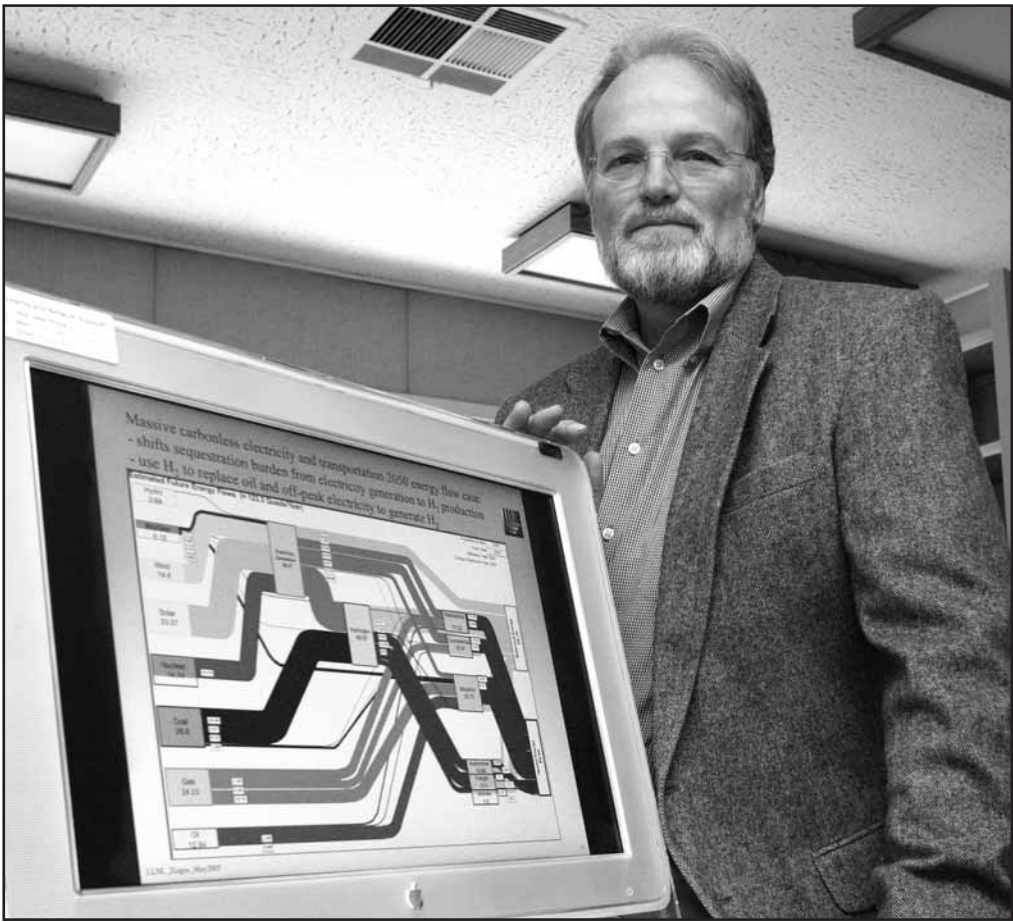
Reflecting the growing concerns about the effect of heat-trapping carbon emissions on the Earth's climate, Livermore began calculating the "carbon flow" associated with different energy sources and demand scenarios — and discovered that even more than optimistic technology and efficiency assumptions are needed to eliminate increased carbon emissions resulting from the nation's energy systems by 2050.

"We started out by looking at the effect on carbon of switching cars from gasoline to hydrogen fuel," said Ziagos, deputy head of LLNL's Atmospheric, Earth and Energy Department. "We found that it's going to take a lot more than hydrogen cars to reduce our petroleum dependence and carbon emissions below present levels."

"Autos will make up only one-third of the transportation sector, and transportation, even with hybrids, is only one-third of the carbon problem," Ziagos said. "So even if every U.S. car in 2050 were to be powered by hydrogen, it would only offset about one-ninth of the total carbon emissions."

The researchers then began plugging other "stretch" scenarios into the model to measure their potential effect on carbon emissions:

- All transportation, not just cars (airplanes, freight, boats, trains), running on hydrogen produced by non-carbon-emitting sources, with light-duty vehicles averaging 50 mpg.
- Six new nuclear power plants going on line each year between now and 2050.
- Renewable energy sources (solar, wind, biomass, geothermal, hydroelectric) generating 75 percent of the nation's electricity.
- Coal used exclusively to produce hydrogen instead of electricity, making possible the capture and storage in the earth of 2.3 billion tons of carbon dioxide a year.



JACQUELINE MCBRIDE/NEWSLINE

Laboratory environmental scientist John Ziagos helps create the "U.S. energy flow charts."

"If we want to move toward a carbonless future, no single technology will do — everything counts."

— JOHN ZIAGOS

Even in such a utopian energy economy, the chart shows, the nation would still be "venting" 2.3 billion tons of carbon dioxide a year — down from the current level of nearly six billion tons, but still a long way from carbon-free.

The main reason: energy demand. Current government projections do not foresee substantial increases in efficiency; so by 2025, the rising demand for coal and oil to power the anticipated growth in electricity use and transportation will require an annual energy flow of about 133 quads (quadrillion BTU). That's up from about 100 quads today, and would increase CO₂ emissions to more than eight billion tons a year.

If those trends were to continue unabated until 2050, Livermore's charts show, energy demand would top 180 quads a year, U.S. petroleum consumption would double to 40 million barrels a day, and natural gas usage would soar from about 25 trillion cubic feet (TCF) today to more than 45 TCF in 2050 (one TCF equals about one quad).

"That's hardly a realistic scenario," Ziagos said. "Not only would we not want to become that dependent on foreign oil from a national security perspective, but venting that much carbon into the atmosphere could pose a threat to the planet from global warming."

Many scientists warn that carbon dioxide, methane and other greenhouse gases, which trap heat near the Earth's surface, are causing climate change that could result in rising sea levels, the disruption of water supplies and crop

and forest patterns, and extreme weather that could endanger both humans and wildlife. While some greenhouse gases arise from natural sources, there is a growing consensus that the planet is heating up due in part to manmade emissions, mostly from energy production.

"A more reasonable outlook for 2050 would have to include an aggressive push for improved energy efficiency, letting us cut consumption to about 120 quads per year," Ziagos said. Required: a 50 percent improvement in electric generation, industrial, freight and aircraft efficiency; auto fuel economy averaging 50 miles a gallon; and petroleum consumption holding steady at about 22 million barrels a day. That scenario would restrain carbon emissions at the levels currently projected for 2025 — about five billion tons a year, assuming the capture and storage of about two billion tons of carbon dioxide. Earlier this month, Secretary of Energy Samuel Bodman launched a nationwide energy efficiency and conservation campaign to educate

American families, businesses and government agencies about "Easy Ways to Save Energy." (See story, page 3.)

But to reach the steep reductions in carbon emissions that may be needed to head off global warming, Ziagos said, the nation will need to commit to even greater energy efficiency improvements, large-scale carbon capture and storage and aggressive programs to increase the use of nuclear power, renewables and hydrogen. One key element in such a program would be eliminating the use of oil as a transportation fuel and replacing it with hydrogen generated largely by coal, which would no longer be used to produce electricity.

"Even in this case," Ziagos said, "we'd still have about two gigatons of carbon dioxide going into the atmosphere every year. So if you ask me what it would take to achieve a carbonless future, I'd have to say at this point, you can't get there from here. The vented carbon dioxide in 2050 is in the residential, commercial and industrial natural-gas-heating usage sector, and would require massive building heating and cooling changes. However, it's probably going to take a transformational technology to totally eliminate carbon emissions from U.S. energy production."

Nevertheless, Ziagos remains confident that scientific and engineering ingenuity will carry the day. Livermore and other national laboratory researchers are pursuing a wide variety of technologies, from innovative hydrogen storage to achieving a 500-mile-range car to developing new high-efficiency low-emission engines that can use diverse biofuels. Livermore is supporting the new international experimental fusion reactor known as ITER while also continuing to pursue alternative approaches to fusion, including the use of "magnetic mirrors" and high-powered lasers to attempt to capture the virtually unlimited, pollution-free energy that powers the sun and stars.

Greater use of geothermal and biomass energy than assumed in the LLNL chart might bring 2050 emissions down to one billion tons a year, Ziagos said, while an all-out commitment to solar could conceivably push CO₂ emissions down even more significantly.

"While pushing on all these fronts, we should pay close attention to how current technologies might work together to assure that all the aspects of energy use are addressed comprehensively," he said. "Let's see where the technology takes us."

SITE 300

Continued from page 1

east of Livermore.

By 1955, the first firing site was established at Bldg. 301, which later became Bldg. 801. By October, the first outdoor test had been conducted. The original protective structure still exists today. But the cavernous reinforced-concrete Contained Firing Facility now overshadows this earth-covered Quonset hut.

From a local history perspective, a portion of Site 300 played a role in the history of Corral Hollow canyon that supported early coal mining, and the Carnegie brick and pottery plant operations. Several of the worker residences, including the Carnegie Plant Manager's home, Carnegie school and mercantile were located on what is now Site 300 property.

Defense and Nuclear Technologies is responsible for the site, where nearly 200 employees work with a principal focus on stockpile stewardship. B Program assesses the operation of non-nuclear weapon components through



JACQUELINE MCBRIDE/NEWSLINE

Site 300 celebrated its 50th anniversary with a special gathering for its employees. Charlie McMillan, right, and Jim Wilson look over posters outlining the history of the Lab's experimental test facility.

hydrodynamic testing. And W Program's Defense Technologies Engineering Division tests established weapons components, subjecting them to

vibration, shock, and temperature changes to monitor and evaluate survivability under a range of environments.

Synthesis of new explosive molecules and formulation of new explosive compounds are cornerstones of the high explosives program.

Chemistry and Materials Science handles synthesis, formulation and manufacturing of explosives, which are researched, developed and safety-tested in small quantities at HEAF. These new materials are scaled up at CMS facilities into larger batches for further testing at the site.

Self-supporting, the site contains all the services necessary to complete its stockpile stewardship mission. In addition to site management, the full crew includes a contingent of Plant Engineering crafts; maintenance and project and planning staff; mechanical and electronics engineers and technicians; stores personnel; garage mechanics; cafeteria workers; a resident nurse; a fire department with EMTs; hazards control ES&H specialists; environmental analyst; security police officers and security personnel; biologists; and water and soil sampling technicians.

TYSON

Continued from page 1

dark matter," Tyson said. "Our galaxy would fall apart if it weren't for dark matter. It supplies just that critical amount of mass to keep us together. We believe that dark matter started in the early phases of the Big Bang."

While dark matter — roughly 25 percent of the energy density of the universe — was responsible for causing matter to aggregate into structure in the first place, it is the yet-more mysterious dark energy — about 70 percent of the energy density of the universe — which is now known to be accelerating it apart.

Tyson, director of the Large Synoptic Survey Telescope, said he wants to probe the physics of dark matter and dark energy while at the same time create a huge database of it. The automated image analysis of this large database presents quite a challenge, Tyson said.

During his presentation, he showed a picture of an iceberg with just a tip of it above water and said it's very similar to what astrophysicists see of the universe.

He said the LSST is one way that scientists can image the rest of the mass of the universe (the large portion of the iceberg that is submerged).

Recently, the LSST received the first year of a four-year, \$14.2 million award from the National Science Foundation to design and develop the world-class, 8.4-meter telescope scheduled for completion in 2012. The Laboratory plays a key role in the development of the telescope.

"One can cover the entire sky in three to four nights," said Tyson, referring to the telescope's capabilities. "LSST will make huge advances and allows us to do something very interesting. There are a lot of new opportunities for all of us to make new discoveries."

The LSST will image an area of the sky roughly 50 times that of the full moon every 15 seconds, opening a

movie-like window on objects that change or move on rapid time scales — supernovae explosions, which can be seen halfway across the universe, nearby asteroids, which might potentially strike Earth and faint objects in the outer solar system. Using the light-bending gravity of dark matter, the LSST will chart the history of the expansion of the universe and probe the mysterious nature of dark energy.

The LSST data will be "open" to the public and scientists around the world — anyone with a Web browser — will be able to access the images and other data produced by the LSST.

Tyson, an experimentalist interested in gravitational physics, studies dark matter distribution, gravitational lens effects, cosmic shear and the nature of dark energy.

Tyson's presentation will be rebroadcast on Lab TV, Channel 2 on Thursday, Oct. 20, at 10 a.m., noon, 2, 4 and 8 p.m. and on Friday, Oct. 21, at 4 a.m.

NIF

Continued from page 1

director for NIF Programs, called his staff together to congratulate them on achieving their goal 18 days ahead of schedule.

When assembled, NIF LRUs are precision electro-optical/mechanical structures weighing between 500 and 1,000 kilograms. The completed facility will have about 5,760 LRUs.

Lru components are assembled and tested in a cleanroom environment to validate the cleanliness, alignment and operation of these complex assemblies, before large robotic forklifts gently insert the LRUs into the beamlines from below.

NIF Project Manager Ralph Patterson said: "This is a tremendous achievement by our talented and dedicated project team. This milestone represents the work of all of us; NIF infrastructure, design, planning, procurement, inspection, warehousing, cleaning, kitting, assembly, testing, transport, installation and controls."

Eight of NIF's 192 beams have now been commissioned and placed into service. They have already achieved an energy output of 153 kilojoules, well above the milestone requirement of 125 kj.

The entire NIF project is expected to be completed in mid-2009, with ignition experiments beginning a year later.



FRANK NUNEZ/TID

NIF installs 1,000th optical unit.



Newsline
UC-LLNL
PO Box 808, L-797
Livermore, CA 94551-0808